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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,402	03/31/2004	Achintya K. Bhowmik	ITL.1099US (P18549)	5383

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EXAMINER	
STULTZ, JESSICA T	

ART UNIT	PAPER NUMBER
2873	

DATE MAILED: 06/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/814,402	BHOWMIK ET AL.	
	Examiner	Art Unit	
	Jessica T. Stultz	2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *0604,0805*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

The specification is objected to as failing to comply with 37 CFR 1.84(p)(5) because the drawings include the following reference character(s) not mentioned in the description: "24" and "26". Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the specification will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 28 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 28 recites the limitation "The system of claim 19". There is insufficient antecedent basis for this limitation in the claim. Specifically there is no previous mention of a system in dependent claim 19. Therefore it is not clear whether the intended meaning is "The imager of

claim 19, wherein the imager is located within a front projection display system" or if claim 28 should depend from claim 20, therefore making this claim vague and indefinite. For purposes of examination, it is assumed that claim 28 depends from claim 20, specifically wherein claim 28 reads, "The system of claim 20".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4-6, 12-18, and 20-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Takano et al US 5,844,249, herein referred to as Takano et al '249.

Regarding claim 1, Takano et al '249 discloses a method comprising: displaying an image (Column 16, lines 15-39, wherein the image detected by sensor, i.e. imager, "100" is displayed by display means "104", Figure 5) using a second order non-linear electro-optic effect (Column 9, lines 42-63 and Column 11, lines 4-21, wherein the film "14" of the optical sensor "100" exhibits a second order non-linear electro-optic effect, Figures 1a-d and 2-5).

Regarding claim 4, Takano et al '249 further discloses forming a second order non-linear electro-optic film over a substrate (Column 9, lines 6-63 and Column 11, lines 4-21, wherein the film "14" of the optical imager "100" exhibits a second order non-linear electro-optic effect and is formed over a substrate "10", Figures 1a-d).

Regarding claim 12, Takano et al '249 discloses an imager (Column 16, lines 15-39, wherein the image detected by sensor, i.e. imager, "100" is displayed by display means "104",

Figure 5) comprising: a second order non-linear electro-optic film (Column 9, lines 42-63 and Column 11, lines 4-21, wherein the film "14" of the optical sensor "100" exhibits a second order non-linear electro-optic effect, Figures 1a-d and 2-5).

Regarding claim 20, Takano et al '249 discloses a system comprising: a processor; and an imager coupled to the processor (Column 16, lines 15-39, wherein the image detected by sensor, i.e. imager, "100" is coupled to processor "104", Figure 5), the imager including a second order non-linear electro-optic effect film (Column 9, lines 42-63 and Column 11, lines 4-21, wherein the film "14" of the optical sensor "100" exhibits a second order non-linear electro-optic effect, Figures 1a-d and 2-5).

Regarding claims 13 and 21, Takano et al '249 further discloses a support structure covered by a thermal interface material and a substrate over the support structure (Column 9, lines 6-63 and Column 11, lines 4-21, wherein the support structure "18" is a hot plate and is therefore covered by a thermal interface material and the substrate is "10", Figures 1a-d).

Regarding claims 5-6, 14-15, and 22-23, Takano et al '249 further discloses forming transistors in the substrate, including memory and drive transistors (Column 7, lines 1-61 and Column 21, lines 12-34, wherein the sensor "100" is applied to substrates including memory and drive transistors, Figures 1a-d and 5).

Regarding claims 16-17, and 24-25, Takano et al '249 further discloses that the film has a switching speed of at least one gigahertz, specifically greater than 100 gigahertz (Column 15, lines 20-36, wherein the sensor "100" and therefore film "14" has a switching speed ranging between 1 Hz to a Terahertz and therefore falls within the claimed range).

Regarding claims 18 and 26, Takano et al '249 further discloses that the film includes a stilbene-based organic molecular salt (Column 11, lines 4-59).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takano et al '249, as applied to independent claim 1 as shown above, in view of Henrichs US 6,879,615, herein referred to as Henrichs '615.

Regarding claim 2, Takano et al '249 disclose a method of displaying an image using a second-order non-linear electro-optic effect in an imager as shown above, but does not specifically disclose that the imager is used in a high end large screen rear projection high definition television. Henrichs '615 teaches of imaging a display including a non-linear second-order optical process (Column 27, line 64-Column 28, line 12) to be used in a large screen rear projection high definition television for the purpose of providing a frequency doubled single laser device within the display system for compact manufacturing (Column 34, line 52-Column 35, line 12). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the method of displaying an image of Takano et al '249 to include using an imager in a high end large screen rear projection high definition television since Henrichs '615 teaches of imaging a display including a non-linear second-order optical process

to be used in a large screen rear projection high definition television for the purpose of providing a frequency doubled single laser device within the display system for compact manufacturing.

Regarding claim 7, Takano et al '249 and Henrichs '615 disclose and teach of a method of displaying an image using a second-order non-linear electro-optic effect as shown above and Takano et al '249 further discloses forming a support structure covered by a thermal interface material and forming a substrate over the support structure (Column 9, lines 6-63 and Column 11, lines 4-21, wherein the support structure "18" is a hot plate and is therefore covered by a thermal interface material and the substrate is "10", Figures 1a-d).

Regarding claims 8-9, Takano et al '249 and Henrichs '615 disclose and teach of a method of displaying an image using a second-order non-linear electro-optic effect as shown above and Takano et al '249 further discloses forming a film having a switching speed of at least one gigahertz, specifically greater than 100 gigahertz (Column 15, lines 20-36, wherein the sensor "100" and therefore film "14" has a switching speed ranging between 1 Hz to a Terahertz and therefore falls within the claimed range).

Regarding claim 10, Takano et al '249 and Henrichs '615 disclose and teach of a method of displaying an image using a second-order non-linear electro-optic effect as shown above and Takano et al '249 further discloses the step of forming a film including a stilbene-based organic molecular salt (Column 11, lines 4-59).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takano et al '249 in view of Henrichs '615, as applied to independent claim 10 as shown above, and further in view of Yakymyshyn et al US 5,396,362, herein referred to as Yakymyshyn et al '362.

Regarding claim 11, Takano et al '249 and Henrichs '615 disclose and teach of a method of displaying an image including using an imager including a film exhibiting a second-order non-linear electro-optic effect, wherein the film comprises a stilbene-based organic molecular salt as shown above, but does not specifically disclose that the film includes 4'-dimethylamino-N-methyl-4-stilbazolium tosylate. Yakymyshyn et al '362 teaches of a system utilizing a film having a second-order non-linear electro-optic effect, wherein the film comprises a 4'-dimethylamino-N-methyl-4-stilbazolium tosylate for the purpose of exhibiting strong absorption bands for certain wavelengths of light (Column 3, line 54-Column 4, line 20). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the film of Takano et al '249 and Henrichs '615 to further comprise 4'-dimethylamino-N-methyl-4-stilbazolium tosylate since Yakymyshyn et al '362 teaches of a system utilizing a film having a second-order non-linear electro-optic effect, wherein the film comprises a 4'-dimethylamino-N-methyl-4-stilbazolium tosylate for the purpose of exhibiting strong absorption bands for certain wavelengths of light.

Claims 19 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takano et al '249, as applied to independent claims 12 and 20 as shown above, in view of Yakymyshyn et al '362.

Regarding claims 19 and 27, Takano et al '249 discloses a system including an imager with a film exhibiting a second-order non-linear electro-optic effect, wherein the film comprises a stilbene-based organic molecular salt as shown above, but does not specifically disclose that the film includes 4'-dimethylamino-N-methyl-4-stilbazolium tosylate. Yakymyshyn et al '362 teaches of a system utilizing a film having a second-order non-linear electro-optic effect, wherein

the film comprises a 4'-dimethylamino-N-methyl-4-stilbazolium tosylate for the purpose of exhibiting strong absorption bands for certain wavelengths of light (Column 3, line 54-Column 4, line 20). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the film of Takano et al '249 to further comprise 4'-dimethylamino-N-methyl-4-stilbazolium tosylate since Yakymyshyn et al '362 teaches of a system utilizing a film having a second-order non-linear electro-optic effect, wherein the film comprises a 4'-dimethylamino-N-methyl-4-stilbazolium tosylate for the purpose of exhibiting strong absorption bands for certain wavelengths of light.

Claims 3 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takano et al '249, as applied to independent claims 1 and 20 as shown above, in view of Batchko US 2002/0158866, herein referred to as Batchko '866.

Regarding claims 3 and 28, Takano et al '249 discloses a method for displaying an image and a system including an imager with a film exhibiting a second-order non-linear electro-optic effect as shown above, but does not specifically disclose the step of forming an imager for a front-projection system. Batchko '866 teaches of an imager including a film exhibiting a second-order non-linear electro-optic effect (Section 42 and 48, wherein the films "1080" exhibit a second-order non-linear electro-optic effect and produce an image "1120", Figure 1), wherein the imager is used for a front-projection system for the purpose of providing an image with variable optical properties including position, magnification and aberrations (Section 44, wherein the image "1120" is projected onto plane "1110", Figure 1). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the method for displaying an image and a system including an imager of Takano et al '249 to include the step of

forming an imager for a front-projection system since Batchko '866 teaches of an imager including a film exhibiting a second-order non-linear electro-optic effect, wherein the imager is used for a front-projection system for the purpose of providing an image with variable optical properties including position, magnification and aberrations.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yaegashi et al US 4,946,261 and Kowalczyk et al US 6,507,681 are cited as having some similar structure to the claimed invention since they disclose devices using a second order non-linear electro-optic effect.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessica T. Stultz whose telephone number is (571) 272-2339. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 571-272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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June 6, 2006

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